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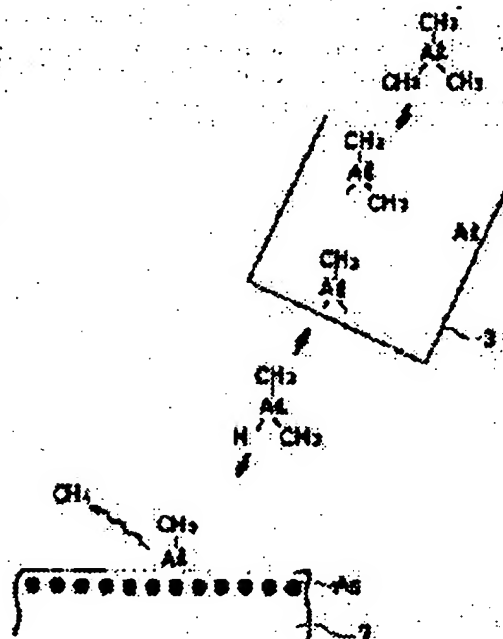
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## (54) ATOMIC LAYER CRYSTAL DEPOSITION METHOD AND DEVICE

### (57)Abstract:

**PURPOSE:** To improve the adsorption efficiency at low temperature thereby enabling the title atomic layer crystal deposition of a compound semiconductor conventionally unrealizable to be made feasible by a method wherein at least one alkyl radical coupler coupled with a metal before the molecules to be deposited reach a substrate is thermal-dissociated to be fed to the substrate to be deposited using the alkyl radical molecules.

**CONSTITUTION:**  $(\text{CH}_3)_3\text{Al}$  having the self deposition stopping function passes through a quartz tube 3 to be thermal-dissociated into  $-(\text{CH}_3)_2\text{Al}$ ,  $-(\text{CH}_3)\text{Al}$ , Al atoms. At this time, the Al atoms stick to the inner wall of the quartz tube 3 while the couplers of  $-(\text{CH}_3)_2\text{Al}$  are coupled with hydrogen to be a stable  $\text{H}(\text{CH}_3)_2\text{Al}$  compound. On the other hand,  $-(\text{CH}_3)\text{Al}$  is also coupled with hydrogen atoms but to be so unstable compound that  $-(\text{CH}_3)\text{Al}$  may be changed into  $\text{H}(\text{CH}_3)_2\text{Al}$ . Accordingly, the hydrogen of the  $(\text{CH}_3)_2\text{Al}$  reaching the substrate 7 surface is dissociated when Al reacts to As on the substrate surface so that Al and As may be easily coupled with each other into a compound at relatively low temperature. Through these procedures, the title atomic layer crystal deposition of a compound semiconductor conventionally unrealizable can be made feasible.



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